approved as accepted 3/7/03

TITLE: APPARATUS FOR CALCULATING IMMUNITY FROM RADIATED ...
INVENTORS: Kenji NAGASE, et al.
SERIAL NO.: 09/282,425
DOCKET NO.: 122.1366

Fig.4

(PRIOR ART)

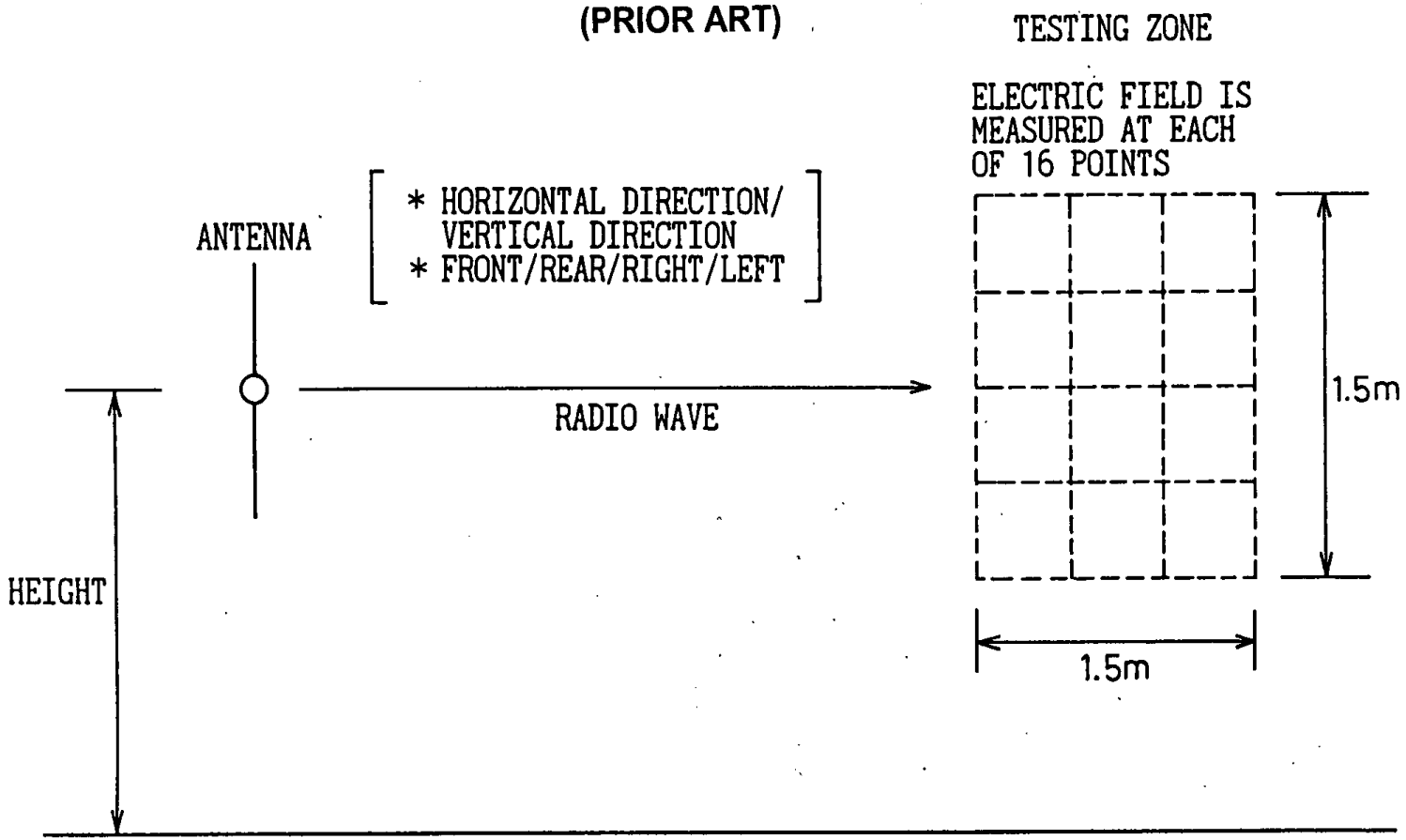


Fig.6A (PRIOR ART)

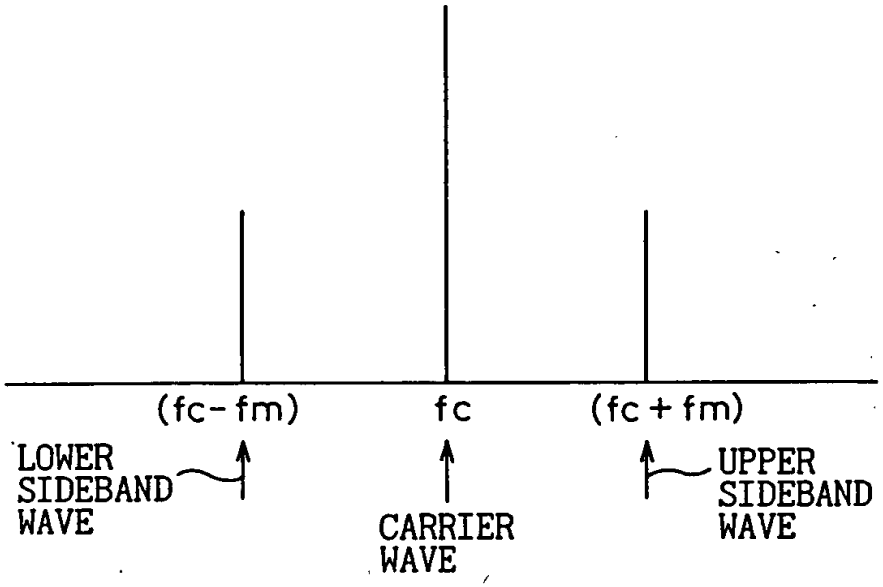
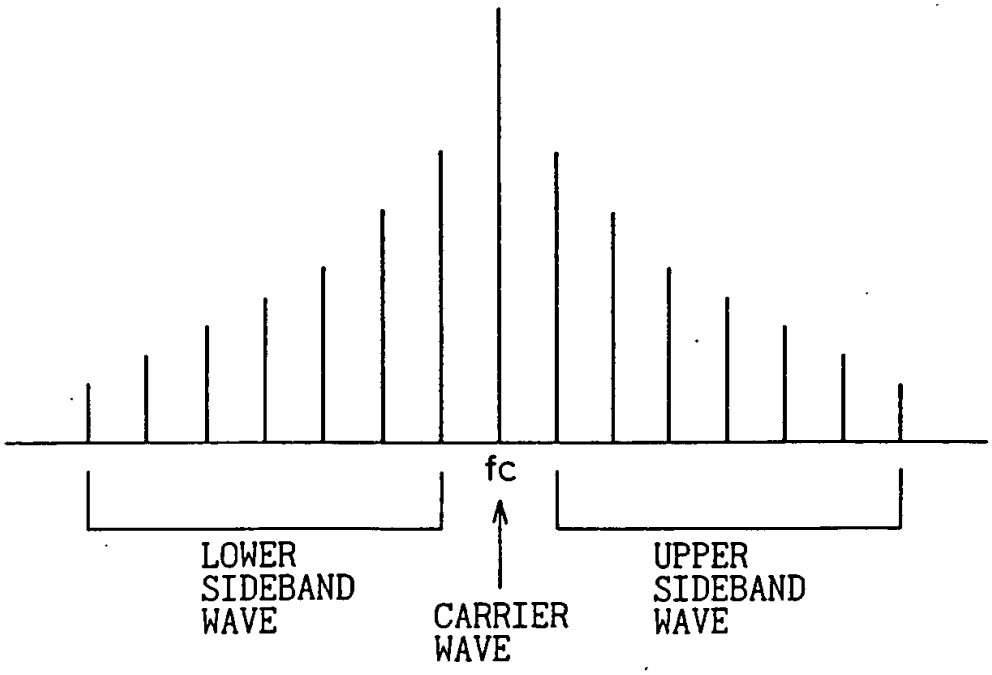


Fig.6B (PRIOR ART)



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3/7/03

Fig.11 (PRIOR ART)

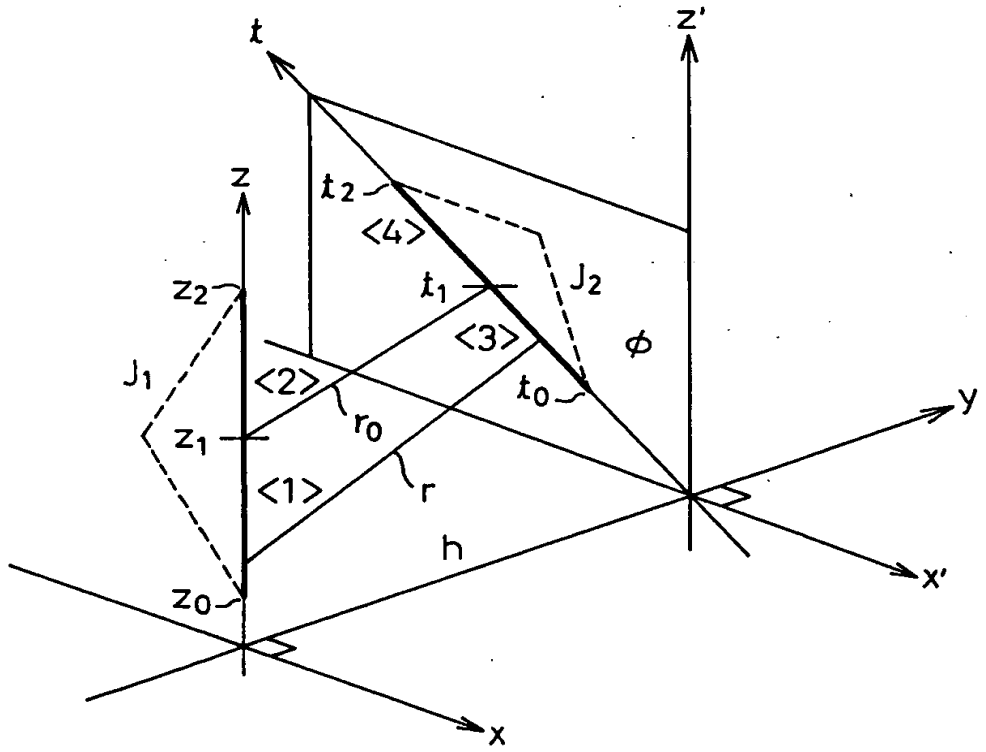

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Fig.12A (PRIOR ART)

$$Z = j\omega \int_S \left[\frac{\mu}{4\pi} J_1 J_2 \cos\phi \frac{e^{-jkr}}{r} + \frac{1}{4\pi\varepsilon} \rho_1 \rho_2 \frac{e^{-jkr}}{r} \right] ds$$

Fig.12B (PRIOR ART)

$$Z_{13} = \frac{j\omega\mu}{4\pi \sin kd_1 \sin kd_3} \int_{t_0}^{t_1} \int_{z_0}^{z_1} [\sin k(z-z_0) \sin k(t-t_0) \cos\phi_1 - \cos k(z-z_0) \cos k(t-t_0)] \frac{e^{-jkr}}{r} dz dt$$

$$Z_{14} = \frac{j\omega\mu}{4\pi \sin kd_1 \sin kd_4} \int_{t_1}^{t_2} \int_{z_0}^{z_1} [\sin k(z-z_0) \sin k(-t+t_2) \cos\phi_2 + \cos k(z-z_0) \cos k(-t+t_2)] \frac{e^{-jkr}}{r} dz dt$$

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Fig.13 (PRIOR ART)

N: NUMBER OF ELEMENTS

MUTUAL IMPEDANCE

ELECTRIC CURRENT

WAVE SOURCE

$$\begin{bmatrix} Z_{11} & Z_{12} & Z_{13} & \cdots & Z_{1N} \\ Z_{21} & Z_{22} & Z_{23} & \cdots & Z_{2N} \\ Z_{31} & Z_{32} & Z_{33} & \cdots & Z_{3N} \\ \vdots & \vdots & \vdots & & \vdots \\ Z_{m1} & Z_{m2} & Z_{m3} & \cdots & Z_{mN} \\ \vdots & \vdots & \vdots & & \vdots \\ Z_{N1} & Z_{N2} & Z_{N3} & \cdots & Z_{NN} \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \\ \vdots \\ I_m \\ \vdots \\ I_N \end{bmatrix} = \begin{bmatrix} V_1 \\ V_2 \\ V_3 \\ \vdots \\ V_m \\ \vdots \\ V_N \end{bmatrix}$$

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Fig.14 (PRIOR ART)

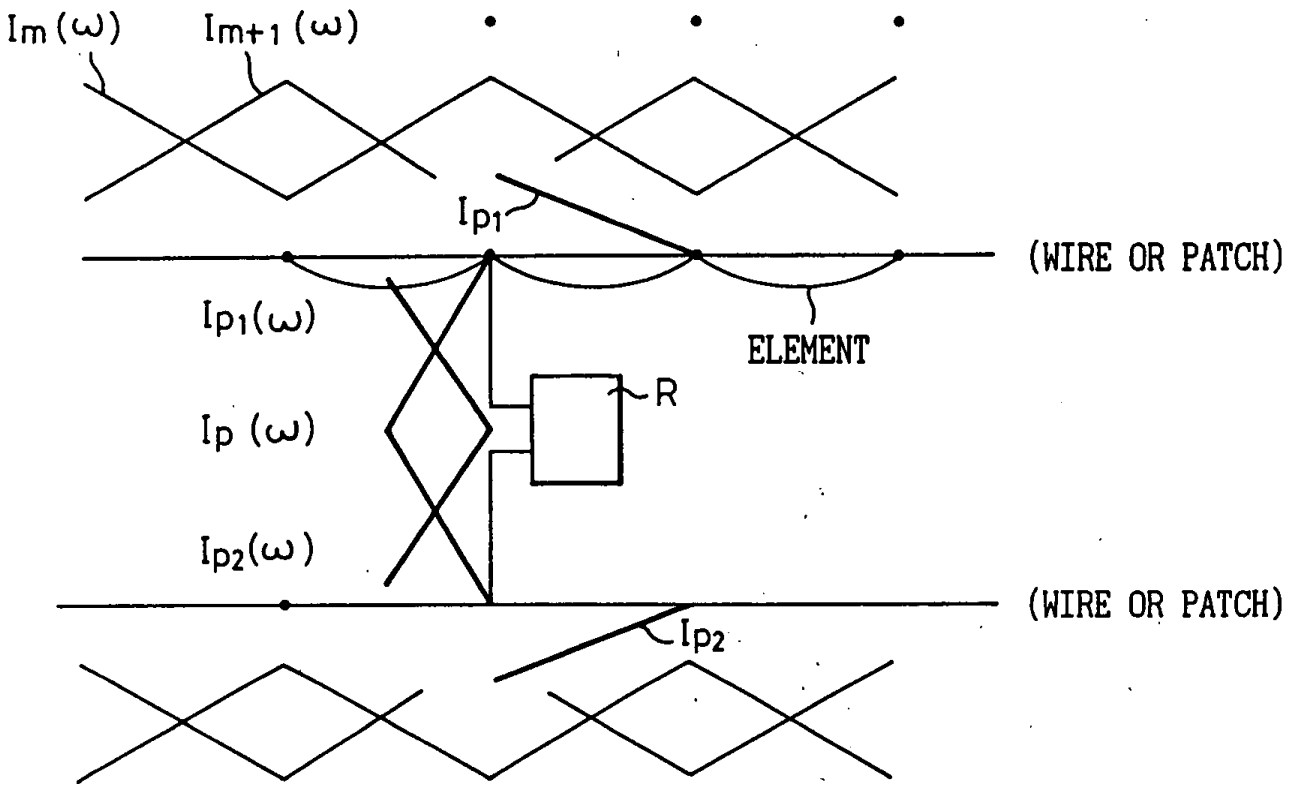

Fig.15A (PRIOR ART)

$$Ip(Z_{pp}+R)+Ip_1 Z_{pp}+Ip_2 Z_{pp2}+\sum_{n=1}^{M} I_n Z_{pn}=0$$

Fig.15B (PRIOR ART)

$$Ip = \frac{-1}{Z_{pp}+R}\left[Ip_1 Z_{pp1}+Ip_2 Z_{pp2}+\sum_{n=1}^{M} I_n Z_{pn}\right]$$

Fig.15C (PRIOR ART)

$$Vp = Ip\,R = \frac{-R}{Z_{pp}+R}\left[Ip_1 Z_{pp1}+Ip_2 Z_{pp2}+\sum_{n=1}^{M} I_n Z_{pn}\right]$$

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Fig.16 (PRIOR ART)

$$Z = LDU = LD^{t}L =$$

$$\begin{bmatrix} 1 & 0 & \cdots & 0 \\ \ell_{21} & \ddots & & \vdots \\ \vdots & & 0 & \vdots \\ \ell_{n1} & \cdots & \ell_{nn-1} & 1 \end{bmatrix} \begin{bmatrix} d_{11} & 0 & \cdots & 0 \\ 0 & \ddots & & \vdots \\ \vdots & & 0 & \vdots \\ 0 & \cdots & 0 & d_{nn} \end{bmatrix} \begin{bmatrix} 1 & \ell_{21} & \cdots & \ell_{n1} \\ 0 & \ddots & & \vdots \\ \vdots & & \ell & \vdots \\ 0 & \cdots & 0 & 1 \end{bmatrix}$$

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Fig.17 (PRIOR ART)

$$Z = LU = \begin{bmatrix} 1 & 0 & \cdots & 0 \\ \ell_{21} & & & \vdots \\ \vdots & & 0 & \vdots \\ \vdots & & & \vdots \\ & \ell & & 0 \\ \ell_{n1} & \cdots & \ell_{nn-1} & 1 \end{bmatrix} \begin{bmatrix} U_{11} & U_{12} & \cdots & U_{1n} \\ 0 & & & \vdots \\ \vdots & & U & \vdots \\ \vdots & & & \vdots \\ & 0 & & U_{n-1} \\ 0 & \cdots & 0 & U_{nn} \end{bmatrix}$$

Fig.18 (PRIOR ART)

$$\begin{bmatrix} Z^{o}c,c & Z^{o}c,d & B^{o}c,d \\ Z^{o}d,c & Z^{o}d,d+Z^{d}d,d & B^{o}d,d+B^{d}d,d \\ B^{o}d,c & B^{o}d,d+B^{d}d,d & -Y^{o}d,d-Y^{d}d,d \end{bmatrix} \begin{bmatrix} Ic,n \\ Id,n \\ Mn \end{bmatrix} = \begin{bmatrix} Vi \\ 0 \\ 0 \end{bmatrix}$$

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